## ***REMARKS***

This is a response to the non-final Office Action of October 18, 2005. Please add claims 80 and 81, and amend claims 19, 61, 64, 66, 68, 69, 73, 75, 77 and 78 as indicated. Please cancel claim 67 without prejudice in this response, and the Applicants reserve the right to reintroduce this claim in a divisional application at a later date. Upon entry of this response, claims 1-66 and 68-81 are pending.

The Applicants respectfully acknowledges the Examiner's determination that claims 38-58 and 70-72 are allowed, and that claims 9-18 and 27-37 are allowable if rewritten in independent form. Furthermore, in the Office Action, claims 1-8, 19-26, 59-69 and 73-79 stand rejected under 35 U.S.C. §102(e). The Applicants respectfully request that there be reconsideration of the claims in view of the Applicant's remarks.

## ***Allowable Subject Matter***

Applicants appreciate the Examiner's indication that claims 38-58 and 70-72 are allowed, and that claims 9-18 and 27-37 are allowable if amended to include all of the limitations of the base claim and any intervening claims. Accordingly, Applicants have amended some allowable claims and presented remarks for the other, and respectfully asserts that they are all now in condition for allowance.

## **Claim Amendment Summary**

Claim 19 is amended to bring the wording into conformity with Claim 1. Claim 61 is amended to clarify the subject-matter of the claim. Claims 64, 73 and 75 are amended to clarify that a voltage is applied across (not to) the series connected load component and device. Claims 66, 68 and 69 are amended to clarify that the method includes determining parameters indicative of complex amplitudes of voltages, multiplying said parameters by

complex conjugates of the same or other parameters, and performing a comparison using the parameters to assist in the identification of the device being tested (in line with the language used in Claim 38, and in accordance with page 29 of the description, for example). Claims 77 and 78 are amended to clarify that an inequality relationship between a first impedance of the device at a first frequency and a second impedance of the device at a second frequency is determined without calculating either of the impedances. New Claims 80 and 81 are added further to clarify the method of Claim 66.

**Rejections Under 35 U.S.C. §102(e)**

Claims 1–8, 19–26, 59, 60, 61–65, and 73–76 were rejected under 35 U.S.C. §102 as being anticipated by *Freeman et al.* (US 6,816,797), and Claims 66–69 and 77–79 were rejected under 35 U.S.C. §102 as being anticipated by *Slates et al.* (US 2003/0222639).

Applicants respectfully disagree that either document anticipates the claims of the present application. Nevertheless, in the interest of expediency, amendments to Claims 61, 66, 68, 69, 73, 75, 77, and 78 have been made to distinguish more clearly over the cited documents, and further remarks relating to the amendments and to specific rejected claims are provided below

**With respect to amended independent claim 1**

With regard to the rejected independent claim 1, the Applicants respectfully traverse the Office Action position that *Freeman et al.* teaches the same system and methods claimed in the present invention. Applicants respectfully disagree and offer the following comments and declaration for consideration.

In particular, Applicants respectfully assert that *Freeman et al.* does not teach or suggest "a signal generating arrangement for generating an electrical signal for application to the series connected load component and device", as claimed.

In addition, Applicants are also unable to find any disclosure or suggestion of "a switch arrangement connected to said measurement channel for switching the measurement channel to sequentially measure a first voltage on a first side of said load component, and one of a second voltage on a second side of said load component or a voltage difference across said load component", as claimed.

These aspects of the present invention, as recited in claim 1, clearly are neither taught nor suggested by the prior art of record. Therefore, the prior art of record does not teach or suggest all the elements of the claimed invention as required by U. S. Patent Law. *In re Royka*, 490 F.2d 981,180 USPQ 580 (CCPA 1974). Consequently, the reasons stated in the Office Action to support the rejection of claim 1 are inadequate and, therefore, should be withdrawn.

By way of background, and with reference to Figure 1 of *Freeman et al*, *Freeman et al.* concerns a method and apparatus for measuring impedance and voltage characteristics of a fuel cell stack 90. A load bank 100 is provided to provide a stable output for the fuel cell stack. Voltages are measured across individual cells or groups of cells in the stack 90 and signals representative of these voltages are connected through a channel splitting device 21 and an analog multiplexer 22 to an A/D converter 70 (Column 5, lines 35–45).

The Office Action suggests that the load bank 100 corresponds to the 'load component' of Claim 1 and that the channel splitting device 21 corresponds to the 'measurement channel' of Claim 1. The Examiner also appears to suggest that the fuel cell stack 90 corresponds to the 'device' of Claim 1.

The Office Action also suggests that the power supply voltage referred to on Col. 6,

lines 51–60 corresponds to the 'signal generating arrangement' of Claim 1 (Col. 6, lines 51–60 state: "*To effect cell voltage measurement, each of the plurality of differential amplifiers 62, 64, etc has a high common-mode rejection ratio. Each differential amplifier preferably is also highly linear. Each differential amplifier may have a gain of substantially unity. Each differential amplifier should also be able to reject as high a voltage as possible at each input. However, the input differential is limited by the power supply voltage as is commonly known in the art. Accordingly, the input differential may be limited to a range of +/- 15V*", emphasis added).

The power supply voltage referred to above is the power supply supplied to the differential amplifiers 62, 64 in the instrumentation bank 120 of Figure 1. There is no disclosure of a power supply voltage being applied to the fuel cell stack 90 and load bank 100. In particular, there is no teaching of suggestion of a "*signal generating arrangement for generating an electrical signal for application to the series connected load component and device*" (emphasis added). Furthermore, since the fuel cell stack itself maintains a potential difference of about 76.5 V (Col. 10, lines 9–17 and Figure 3) it is also not clear how or why a power supply of approximately +/-15 V would be applied to the series connected load component and device.

Moreover, in connection with the switch arrangement of Claim 1, the Office Action refers to the analog multiplexer 22 mentioned at Col. 5, lines 36–55 and Col. 6, lines 36–60. As is described at the cited passages and can be seen from Figure 1, the analog multiplexer 22 multiplexes a plurality of voltage readings produced by the instrumentation amplifiers 120, relating to voltages across cells in the fuel cell stack 90, and the multiplexer outputs a signal to the A/D converter 70. However, *Freeman et al.* does not disclose a "*switch arrangement connected to a measurement channel for switching the measurement channel to sequentially measure a first voltage on a first side of said load component, and one of a second voltage on*

*a second side of said load component or a voltage difference across said load component*" as claimed. It can clearly be seen from Figure 1 that in fact the multiplexer 22 only multiplexes signals relating to voltage measurements across cells in the fuel cell stack 90. The multiplexer 22 does not switch any signals relating to measurements of voltage across the load bank 100 (which the Office Action identifies as corresponding to the 'load component' of Claim 1).

Consequently, *Freeman et al.* fails to recite at least two elements of Claim 1. Therefore, the prior art of record does not teach or suggest all the elements of the claimed invention as required by U. S. Patent Law. *In re Royka*, 490 F.2d 981,180 USPQ 580 (CCPA 1974).

It is also noted that it would not be obvious in view of *Freeman et al.* to provide either the signal generating arrangement or the switch arrangement as claimed in Claim 1, because *Freeman et al.* does not contain any hint or suggestion of these claim elements. Furthermore, one of ordinary skill in the art would have no incentive to introduce the missing claim elements into the system of *Freeman et al.* because the fuel cell stack 90 provides its own voltage, and only a single measurement is taken in relation to the load bank 100 (thus no switching is required). "The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re, Gordon*, 733 F.2d 900, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984).

For at least one of the above reasons, the Applicants respectfully submit that these aspects of the present invention, as recited in claim 1, clearly are neither taught nor suggested by the prior art of record as required by *In re Royka*, 490 F.2d 981,180 USPQ 580 (CCPA 1974). Therefore, Applicants respectfully request that this rejection be withdrawn and allowance of Claim 1.

**With respect to independent claims 19, 59 and 60**

With regard to the rejected independent claims 19, 59 and 60 the Applicants respectfully traverse the Office Action position that *Freeman et al.* teaches the same system and methods claimed in the present invention. Applicants respectfully disagree and offer the following comments for consideration.

In particular, Applicants respectfully assert that *Freeman et al.* does not teach or suggest "*applying an electrical signal to the series connected load component and device; using a measurement channel to sequentially measure a first voltage on a first side of said load component, and one of a second voltage on a second side of said load component or a voltage difference across said load component*", as now claimed in claim 19.

Claim 59 recites "*a generator arrangement for applying a voltage signal to the series connected load component and device*" and "*a switch arrangement for switching the measurement channel to sequentially measure a first voltage on a first side of said load component, and one of a second voltage on a second side of said load component or a voltage difference across said load component*". Applicants are unable to find any disclosure or suggestion of the element as claimed.

Claim 60 recites "applying a voltage signal to the series connected load component and device; sequentially measuring a first voltage one side of said load component and a second voltage on the other side of said load component or a difference voltage across said load component using a measurement channel". Applicants are unable to find any disclosure or suggestion of the element as claimed.

For at least the reasons analogous to those stated above with regard to Claim 1, Applicants respectfully submit that the Office Action has failed to show a *prima facie* case of anticipation by the *Freeman et al.* document of Claims 19, 59 and 60. Therefore, Applicants respectfully request withdrawal of the rejections and reconsideration and allowance of Claims

19, 59 and 60.

**With respect to independent claim 61**

Claim 61 has been amended to clarify that it is the apparatus (rather than the method) that is adapted to generate an output in dependence upon the impedance or at least one component of the impedance of a device.

Applicants are unable to find in *Freeman et al.* any disclosure or suggestion of "*connecting a test load component having a known impedance or at least one component thereof to said apparatus in place of said device and in series with said load component*", as claimed. Therefore, Applicants respectfully assert that *Freeman et al.* is inadequate as prior art to anticipate the claimed invention.

Furthermore, Applicants are also unable to find any disclosure or suggestion of "*applying a voltage signal across the series connected load component and device*". Applicants are further unable to find any disclosure or suggestion of "*storing the determined value for later use in the generation of an output*". Therefore, Applicants respectfully assert that *Freeman et al.* is inadequate as prior art to anticipate the claimed invention.

The Office Action suggests that the load bank 100 corresponds to the '*load component*' of Claim 61. The Office Action also appears to suggest that the fuel cell stack 90 corresponds to the 'device' of Claim 61. Applicants respectfully disagree.

The Office Action appears also to suggest that the use of the shunt 110 corresponds to '*connecting a test load component having a known impedance or at least one component thereof in place of said device and in series with said load component*'. However, the shunt 110 is used to measure current flowing through the load bank 100 (Column 5, lines 20–23: "*for current measuring purposes, a shunt 110 is provided in the circuit including the fuel cell stack 90 and the load bank 100, across the load bank 100*", emphasis added), and the shunt is

not used for calibrating the apparatus. In any event, Applicants respectfully assert there is no disclosure or suggestion in *Freeman et al.* of replacing the fuel cell bank 90 (the 'device') with the shunt 110, for the purpose of calibration or otherwise.

With regard to the feature of Claim 61 of "*storing the determined value*" (which value is dependent on the impedance or at least one component of the impedance of the load component), the Office Action refers to Col. 5, lines 24–35, Col. 5, and line 57–Col. 6, line 8. The only reference in these passages to storing values is at Col. 5, lines 33–34: "*The perturbation waveform function may be stored in the CPU 20*". The Applicants respectfully asserts that the perturbation waveform function is not a value dependent on the impedance or at least one component of the impedance of the load component, and nor is it used to calibrate outputs of the apparatus. Instead, it is used to provide a constant, DC level with a superimposed alternating level (Col. 5, lines 24–26) to allow the fuel cells to discharge in a controlled fashion.

Furthermore, as mentioned above in relation to Claim 1, *Freeman et al.* does not disclose or suggest applying a voltage signal to the series connected load component and device.

Consequently, Applicants assert that *Freeman et al.* fails to recite at least three elements of Claim 61. For at least one of the above reasons, the Applicants respectfully submit that these aspects of the present invention, as recited in claim 1, is clearly are neither taught nor suggested by the prior art of record as required by *In re Royka*, 490 F.2d 981,180 USPQ 580 (CCPA 1974). Therefore, Applicants respectfully request that this rejection be withdrawn and allowance of Claim 61.

**With respect to independent claim 64**

A minor amendment has been made to Claim 64 to clarify that the generator arrangement applies a voltage across (rather than simply 'to') the series connected load component and device.

Applicants assert that they are unable to find in *Freeman et al.* any disclosure or suggestion of "*a generator arrangement for applying a voltage signal across said series connected load component and device*", as now claimed.

Moreover, Applicants are also unable to find in *Freeman et al.* any disclosure or suggestion of "*a measurement arrangement adapted to measure the voltage across said device and a voltage drop across said load component to obtain a measurement of the current in said device*", as claimed.

In addition, Applicants are unable to find any disclosure or suggestion of "*a test load component having a known impedance or at least one component of the impedance for connection in place of said device and in series with said load component for calibration of said load component*", as claimed.

Furthermore, Applicants are further unable to find any disclosure or suggestion of "*calibration processing means for processing the measurements when said test load component is connected in place of said device to determine and store a value dependent upon the impedance or at least one component of the impedance of the load component*" , as claimed.

Moreover, Applicants are also unable to find any disclosure or suggestion of "*signal processing means for processing said measurements when said device is connected to generate an output in dependence upon the impedance or at least one component of the impedance of said device using the stored value*", as claimed.

The Office Action suggests in his report that the load bank 100 corresponds to the

'load component having a known impedance' of Claim 64. The Office Action also suggests that the fuel cells in the fuel cell stack 90 correspond to the 'device' of Claim 64. The Office Action also suggests that the power supply voltage referred to on Col. 6, lines 51–60 corresponds to the 'generator arrangement' of Claim 64. Applicants respectfully disagree.

As discussed above in relation to Claim 1, Applicants assert that there is no disclosure of the power supply voltage being applied across the series connected load component and device (the power supply voltage is only mentioned in relation to the instrumentation amplifiers 120 which are connected to individual cells in the fuel cell stack 90), and thus the generator arrangement as a whole is not disclosed.

Also as discussed above in relation to Claim 1, Applicants assert that there is no disclosure or suggestion of a measurement arrangement adapted (both) to measure the voltage across the device and (also) to measure the voltage drop across the load component. The instrumentation amplifiers 120 only measure voltages across part of the 'device' (they measure voltages across individual cells of the fuel cell stack 90). The instrumentation amplifier 130 is a separate device to the amplifiers 120, and measures a voltage drop across the shunt 110, not across the load bank 100 (which the Office Action suggests corresponds to the 'load component'). The failure of *Freeman et al.* to disclose a test load component, or to disclose replacing the device with a test load component, is discussed in relation to Claim 61. It is noted that the Office Action refers to a 'test fuel cell stack', but Applicants cannot find this term mentioned anywhere in *Freeman et al.* therefore, applicants assert that *Freeman et al.* is inadequate as prior art to anticipate the present invention.

In addition, Applicants contend that *Freeman et al.* also fails to disclose calibration processing means for processing the measurements when "*said test load component is connected in place of said device*" and "*to determine and store a value dependent upon the impedance or at least one component of the impedance of the load component*" , as claimed

(emphasis added).

For at least one of the reasons stated above, and for reasons analogous to those stated with regard to Claims 1 and 61, the Applicants assert that the Office Action has failed to state a *prima facie* case of anticipation or obviousness with respect to Claim 64. Consequently, the Applicants respectfully submit that these aspects of the present invention, are neither taught nor suggested by the prior art of record as required by *In re Royka*, 490 F.2d 981,180 USPQ 580 (CCPA 1974). Therefore, Applicants respectfully request that this rejection be withdrawn and allowance of Claim 64.

**With respect to independent claim 66**

Claim 66 has been amended to provide further details of the processing which is carried out. The new method steps are comparable to the method steps given in Claim 38 and elsewhere, and relate to measurements taken at two (or more) different frequencies, rather than at a single frequency. The method steps are set out in more detail on pages 20, 21 and 29 of the description, for example, which pages include formulae relating the various parameters.

Applicants assert that *Slates et al.* does not disclose or suggest at least one of the features of Claim 66 as amended. In more detail, applicants assert that *Slates et al.* does not disclose "*determining first and second parameters indicative of the complex amplitude, at said first and second frequency respectively, of the first voltage on a first side of said load component connected to said device*", "*determining third and fourth parameters indicative of the complex amplitude, at said first and second frequency respectively, of said difference voltages or a calculated difference voltage comprising the difference between the first and second voltages*", "*multiplying each of the first and third determined parameters by the complex conjugate of the third determined parameter to generate fifth and sixth parameters respectively*", "*multiplying each of the second and fourth determined parameters by the*

*complex conjugate of the fourth determined parameter to generate seventh and eighth parameters respectively*", "*performing a comparison using said fifth, sixth, seventh and eighth parameters to determine said value or performing a comparison using one or more components or derivatives of said fifth, sixth, seventh and eighth parameters to determine said value*", and "*using said value to identify said device*".

Instead, Applicants contend that the *Slates et al.* computes a number of impedances of the device under test (DUT) when a respective number of different frequencies are applied, using the formula given on page 15, paragraph 173 ("*The true or compensated value of the unknown impedance* $Z_{DUT}$ *is determined by an open/short/load equation which is as follows:* $Z_{DUT} = Z_{STD}\ (Z_O - Z_{SM})\ (Z_{XM} - Z_S) / (Z_{SM} - S_Z)\ (Z_O - Z_{XM})$". Applicants stress that this formula requires the division of one set of complex numbers by another set of complex numbers, and is thus less efficient than the method now claimed in Claim 66, which does not carry out any division operations (which are relatively computationally intensive). Furthermore, system noise and other measurement errors in the *Slates et al.* system can cause the divisor term of the equation in paragraph 173 to be zero, resulting in a division-by-zero error. This can require complicated error handling to be put in place to trap such errors.

For at least one of the reasons stated above, the Office Action has failed to state a *prima facie* case of anticipation or obviousness with respect to Claim 66, and so Applicants respectfully request reconsideration and allowance of Claim 66.

**With respect to independent claim 69**

As with Claim 66, Claim 69 has been amended to provide further details of the processing which is carried out. The new method steps are comparable to the method steps given in Claim 38 and elsewhere, and relate to the processing carried out when measurements are taken at two (or more) different frequencies, rather than at a single frequency. Again, the

method steps are set out in more detail on pages 20, 21 and 29 of the description, for example, which pages include formulae relating the various parameters.

Claim 69 as amended recites "*obtaining first and second parameters indicative of the complex amplitude, at said first and second frequency respectively, of the first voltage on a first side of said load component connected to said device*", "*obtaining third and fourth parameters indicative of the complex amplitude, at said first and second frequency respectively, of said difference voltages or a calculated difference voltage comprising the difference between the first and second voltages*", "*multiplying each of the first and third parameters by the complex conjugate of the third determined parameter to generate fifth and sixth parameters respectively*", and "*multiplying each of the second and fourth parameters by the complex conjugate of the fourth determined parameter to generate seventh and eight parameters respectively*", which Applicants assert our neither taught nor suggested by *Slates et al.*

Consequently, for at least one of the reasons stated with regard to Claim 66, the Office Action has failed to state a *prima facie* case of anticipation or obviousness with respect to Claim 69. Therefore, Applicants respectfully request that this rejection be withdrawn and allowance of Claim 69.

**With respect to independent claim 73**

A minor amendment has been made to Claim 73 to clarify that the generator arrangement applies a voltage across (rather than simply 'to') the series connected load component and device.

Applicants are unable to find in *Freeman et al.* any disclosure or suggestion of "*a generator arrangement for applying a voltage signal across the series connected load component and device*" as now claimed, or "*a measurement arrangement adapted to measure*

*a first voltage on one side of said load component, and a second voltage on the other side of said load component or a difference voltage comprising the voltage difference across said device*", as claimed.

Applicants are furthermore unable to find in *Freeman et al.* any disclosure or suggestion of a signal processing arrangement "*adapted to monitor said measurements to detect fault conditions in said device and to output a warning output if a fault condition is detected.*"

The Office Action suggests that the load bank 100 corresponds to the 'load component having a known impedance' of Claim 73. The Office Action also suggests that the fuel cells in the fuel cell stack 90 correspond to the 'device' of Claim 73. The Office Action also suggests that the power supply voltage referred to on Col. 6, lines 51–60 corresponds to the 'generator arrangement' of Claim 73. Applicants respectfully disagree.

As discussed above in relation to Claim 1, Applicants contend that there is no disclosure of the power supply voltage being applied across the series connected load component and device (the power supply voltage is only mentioned in relation to the instrumentation amplifiers 120 which are connected to individual cells in the fuel cell stack 90), and thus the generator arrangement as a whole is not disclosed.

Also as discussed above in relation to Claim 1, Applicants contend that there is no disclosure of a measurement arrangement adapted to measure (both) a first voltage on one side of said load component, and (also) a second voltage on the other side of said load component or a difference voltage comprising the voltage difference across said device.

The Office Action suggests that the passage from Col. 8, line 10 – Col. 10, line 8 discloses a signal processing arrangement adapted to monitor measurements to detect fault conditions and to output a warning output if a fault condition is detected. Applicants cannot find in the indicated passage any mention of 'fault condition', 'warning output' or the like,

nor any suggestion thereof. Applicants assert that the passage in question instead describes how the *Freeman et al.* apparatus is calibrated in order to reduce measurement errors. *Freeman et al.* lists the possible measurement errors as a common-mode voltage error (Col. 8, lines 20–28), DC offset (Col. 8, lines 38–44), and quantization noise (Col. 8, lines 45–50). These measurement errors are inherent in the apparatus, and do not relate to a fault condition.

Additionally, Applicants state that none of the passages cited in the Office Action make any mention of detecting a fault condition when at least one measurement is outside a predetermined threshold or range.

Consequently, for at least the reasons stated above, and for reasons analogous to those stated with regard to Claim 1, the Applicants declare that the Office Action has failed to state a *prima facie* case of anticipation or obviousness with respect to Claim 73, and so Applicants respectfully request reconsideration and allowance of Claim 73.

**With respect to independent claim 75**

A minor amendment has been made to Claim 73 to clarify that the generator arrangement applies a voltage across (rather than simply 'to') the series connected load component and device, and to correct a minor error.

Claim 75 as amended recites "*applying a voltage across the series connected load component and device*", "*measuring a first voltage on one side of said load component, and a second voltage on the other side of said load component or a difference voltage comprising the voltage difference across said load device*", and "*monitoring said measurements to detect fault conditions in said device and outputting a warning output if a fault condition is detected*". The Applicants respectfully assert that *Freeman et al.* lacks the disclosure or suggestion of the any of these element steps.

For at least one of the reasons analogous to those stated above with regard to Claims 1

and 73, Applicants respectfully submit that the Office Action has failed to show the anticipation by the *Freeman et al.* document of Claim 75. Therefore Applicants respectfully request withdrawal of the rejections and reconsideration and allowance of Claim 75.

**With respect to independent claim 77**

Claim 77 has been amended to clarify that the measurements are processed in a multiplicative and non divisional manner to determine an inequality relationship between impedances of the device at different frequencies, without calculating either impedance.

Applicants are unable to find in *Slates et al.* any disclosure or suggestion of "*processing said measurements in a multiplicative and non divisional manner*", as claimed.

Furthermore, Applicants are also unable to find in *Slates et al.* any disclosure or suggestion of determining "*if a first impedance or part of the impedance of the device at a first frequency has a predefined inequality relationship with a second impedance or part of the impedance of the device at a second frequency*", as now claimed.

Moreover, Applicants are unable to find in *Slates* any disclosure or suggestion of processing the measurements "*without calculating either impedance*".

As noted above in relation to Claim 66, *Slates et al.* computes an impedance of a device under test (DUT) using a formula which divides one set of complex numbers by another set of complex numbers (page 15, paragraph 173: "*The true or compensated value of the unknown impedance* $Z_{DUT}$ *is determined by an open/short/load equation which is as follows:* $Z_{DUT} = Z_{STD}(Z_0-Z_{SM})(Z_{XM}-Z_S) / (Z_{SM} - S_Z)(Z_0 - Z_{XM})$". Applicants contend that there is no disclosure or suggestion in *Slates et al.* of processing measurements indicative of the voltage across a device and the current flowing through the device in a multiplicative and non divisional manner.

Applicants admit that *Slates et al.* does mention identifying unknown materials by

driving a probe 20 at one or more different frequencies. However, Applicants state that it to uses a different process to identify the device under test (Page 18, paragraph 229: "*Thereafter, the system 10 subsequently identifies unknown materials by first digitally measuring the complex impedance of the probe 20 driven at one or more different frequencies and disposed adjacent an unknown material.* Next the system 10 *calculates the normalized impedance curve for the unknown material at the one or more different frequencies by using an equation an algorithmic function or a database of values for the unknown material at each driving frequency.* The system 10 then *compares the equation (or algorithm) determined for the unknown material to one or more previously determined equations (or algorithms) for known materials to obtain or interpolate a match for identifying the unknown material*", emphasis added).

In other words, Applicants contend that *Slates et al.* generates equations or algorithms derived from impedance measurements, and matches the equations or algorithms against a library of equations or algorithms corresponding to known materials. Clearly this is distinct to determining if a first impedance or part of the impedance of the device at a first frequency has a predefined inequality relationship with a second impedance or part of the impedance of the device at a second frequency, as required by Claim 77.

Lastly, it can be seen that the system of *Slates et al.* is limited to calculating impedances of either the probe or the device under test (DUT) (see the above-mentioned passage at Page 18, paragraph 229, for example). Applicants assert that *Slates et al.* does not disclose or suggest using the disclosed system in any way which does not involve calculating the impedance of a probe or of the device under test (DUT).

For at least one of the reasons stated above, the Office Action has failed to state a prima facie case of anticipation or obviousness with respect to Claim 77, and so Applicants respectfully request reconsideration and allowance of Claim 77.

**With respect to dependent Claims 2–18, 20–37, 62, 63, 65, 68, 74, 76 and 78–81**

Claims 2–18 depend from Claim 1; Claims 20–37 depend from Claim 19; Claims 62 and 63 depend from Claim 61; Claim 65 depends from Claim 64; Claims 68, 80 and 81 depends from Claim 66; Claim 74 depends from Claim 73; Claim 76 depends from Claim 75; and Claims 78 and 79 depend from Claim 77, all of which are all believed to be allowable over the prior art made of record. Therefore, these claims are allowable as a matter of law as claims dependent on allowable independent claims. *In re Fine*, 837 F.2d 1071 (Fed. Cir. 1988).

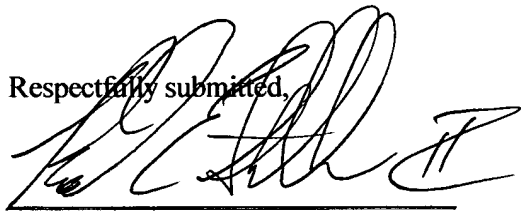
**Other References Cited in the Action**

In addition to the references applied in the Office Action, it is respectfully submitted that Applicant's invention, as now recited in claims 1-66 and 68-81 are neither anticipated nor rendered obvious by any of the other references cited in the Office Action, either taken alone or in combination. Furthermore, Applicants reserve the right to swear behind any of the other references cited in the Office Action at a later date. Arguments presented to distinguish such references should not be construed as admissions that the references are prior art.

## ***CONCLUSION***

In view of all of the foregoing, the Applicants respectfully submit that claims 1-66 and 68-81 are in condition for allowance and such action by the Examiner is earnestly solicited. If the Examiner has any questions, the Examiner is requested to contact Robert E. Stachler II at (404) 815-3708.

Respectfully submitted,



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